

not only for mental and nervous condition but also for physical condition.

Numerous observations by physicians and others show that weather change due to approach of a barometric minimum manifests itself in different symptoms in not a few persons, these usually coinciding with the fall of the barometer and disappearing with the entrance of foul weather. One group of symptoms includes excitement, enervation, lower mental power, dizziness, increase in pulse rate (Frankenhäuser). There is increased discomfort to those persons afflicted with rheumatism and neuralgia. Apoplectic strokes are more frequent with falling than with rising pressure (Berger), and such is the case with death from senile debility, post-mortem examination showing marked dilation in the heart (Radestock). In the months with most frequent and most marked barometric oscillations the number of deaths with mentally diseased persons increases, and there is sudden aggravation in the condition of such persons with rapid fall in atmospheric pressure (Krykiakievitz). Lomer and Kalley find increase in epileptic attacks with pressure oscillations, both explaining the reaction as due to the imperfect adaptability of the brain of the epileptic to the stimulation caused by rapid change in pressure.

Miller shows sensitiveness because of old wounds and amputations, and Farkas finds among his patients, disabled soldiers, those whose condition changes from very best to very worst with change of northerly wind to sirocco; he asserts also that suffering from rheumatism and gout makes manifest the latent disposition to "weather feeling." Heim reports on "nerve irritating" winds in different regions, noting that in Egypt the dry, dust-laden winds of June bring many patients to the insane asylums at Cairo and greatly excite those already under treatment.

Changes in health may be explained by the difference in air supply, whether there is inflow to a minimum of pressure, vitiated ground air, or outflow from a maximum of pressure, pure air from upper levels (Frankenhäuser).

In physical and mental tests made by Pederson and Lehmann it was found that better results accompany increased light intensity, that there is a most favorable temperature (not the same for all persons) above which there is lessened power, and that there are pressure relations in autumn and winter, poorer execution accompanying falling pressure.

Trabert instituted an investigation at Innsbruck, where the foehn is decided, and found all days termed bad when a barometric depression dominated conditions or was approaching, while all days were termed good when the pressure was high or rising. In view of this he could well say: "As with the weather so also with one's state of health, the distribution of pressure possesses influence in the highest degree."

THE NEBULIZER—A DEVICE FOR ARTIFICIALLY PRODUCING MIST.

By DONOVAN MCCLURE.

[Excerpts from an article, "Laying dust with fog," in the *Scientific American Monthly*, New York, May, 1921, pp. 419-420.]

Dr. L. V. Nicolai, a specialist in diseases of the ear, nose, and throat, and also professor in the University of

Pavia, Italy, has recently conducted a number of experiments in the production of artificial fog to overcome the dust conditions in textile factories and other workrooms where tuberculosis thrives as a result of the fine dust particles held in suspension. He calls his process "nebulization."

The nebulized fog produced by Dr. Nicolai's apparatus consists of liquid particles of from 1 to 5 microns in diameter; it spreads in any atmosphere, sharing in the eddies produced in the air either by variations of temperature or by the sweeping movement produced by the arrangement of the apparatus. It flows along the walls, rising and falling and homogenizing the atmosphere, and it takes several hours to settle. These fog particles carry electric charges of equal size which tend to repel each other and thus prevent coalescence, which is a very important point as regards its persistence. Furthermore, it may be made the medium for bearing healing agents, such as balsam, saline salts, etc., which it will distribute in a very homogeneous manner.

Disinfection tests made by the inventor prove that all pathogenic germs not only in the atmosphere, but in fabrics and furs, books and papers, etc., can be completely sterilized in 5 to 12 hours, even where there are several thicknesses of cloth or paper.

A definite degree of humidity is required in workrooms where the fibers of cotton or linen are spun or woven. With this nebulizer it is claimed that the atmosphere may be made sufficiently humid to prevent fraying of the fibers while at the same time leaving it perfectly respirable.—H. L.

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ATMOSPHERIC PRESSURE AND MINE GASES.¹

In 1917, from April to November, an engineer of the U. S. Bureau of Mines made a record of the appearance of an unusual gas in a number of the precious metal mines near Eureka, Utah. The occurrence of the gas was associated invariably with a fall of barometric pressure. The gas appeared a few hours after the barometer began to fall and endured until the barometer began to rise. Mr. G. E. McElroy has just now completed an investigation covering a similar period in which many more gas analyses and barometer readings were made.

His conclusion is that the gas, which is extremely heavy (a mixture of carbon dioxide and nitrogen) and will extinguish a light within an inch of the same level repeatedly, is contained in a reservoir in a fractured stratum of rock, and escapes into the mine workings with a falling or low barometer, except during the minor or more rapid falls, which would not allow the gas to escape through the fissures before the rise in the barometer occurs. The ventilating fans serve to work the gas out of the tunnels. It has been the practice to send the hoisting skip into the mine, carrying a carbide lamp, to test for gas before sending any workmen in.

Mr. Benj. F. Tibby, a retired mine operator, has told me that for many years while operating a deep mine at Butte, Mont., he regulated the speed of his ventilating fans by the barometer which he kept at the top of the shaft. He claimed that he secured a greater production per man by increasing the amount of air pumped in to the men when the barometer was low.—J. Cecil Alter.

¹ Cf. Colliery explosions and barometric pressure. *Mo. WEATHER REV.*, 1907, 35: 413.